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Job No.: CTCE/BBMP/W.No.13/GNR/WMM/Gradation/2015-16

15.02.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Mr. G.N. Ramesh,**
No. 01, 3rd Main, Gandhi Grama, 7th Cross, Maruthi Layout, Bangalore - 560021.

Name of Work : Improvements and Asphalting of Prashanthanagara & balance roads in Ward No. 13 in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : EE/DD/WO/365/2014-15 Datd: 31.03.2015

Date of Testing : 15.02.2016

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 6770

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	265	265	3.9	96.1	95-100
22.4	2310	2575	38.0	62.0	60-80
11.2	1315	3890	57.5	42.5	40-60
4.75	725	4615	68.2	31.8	25-40
2.36	855	5470	80.8	19.2	15-30
0.600	510	5980	88.3	11.7	8-22
0.075	465	6445	95.2	4.8	0-8

Note:

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3. Any Query regarding the report must be reported within 30 days from the date of testing.

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W-13
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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15.02.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Mr. G.N. Ramesh,**
No. 01, 3rd Main, Gandhi Grama, 7th Cross, Maruthi Layout, Bangalore - 560021.

Name of Work : Improvements and Asphalting of Prashanthanagara & balance roads in Ward No. 13 in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : EE/DD/WO/365/2014-15 Datd: 31.03.2015

Date of Testing : 15.02.2016

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **6945**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	280	280	4.0	96.0	95-100
22.4	2355	2635	37.9	62.1	60-80
11.2	1215	3850	55.4	44.6	40-60
4.75	825	4675	67.3	32.7	25-40
2.36	890	5565	80.1	19.9	15-30
0.600	525	6090	87.7	12.3	8-22
0.075	480	6570	94.6	5.4	0-8

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T-2377

Job No.: CTCE/BBMP/W.No.13/GNR/CSR-03/1090b/Bitumen/2015-16 09.03.2016

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* CUSTOMER	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* AGENCY	:	**Mr. G.N. Ramesh,** No. 01, 3rd Main, Gandhi Grama, 7th Cross, Maruthi Layout, Bangalore - 560021.
* NAME OF WORK	:	Improvements and Asphalting of Prashanthanagara & balance roads in Ward No. 13 in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/DD/WO/365/2014-15 Dated: 31.03.2015
SAMPLE ID	:	Bitumen
SAMPLE RECEIVED ON	:	07.03.2016
DATEOF TESTING	:	07.03.2016 to 09.03.2016

The results of the tests conducted on the Bitumen sample are as follows:

Sl.No	Description	Test Result	Technical Reference	Requirement as per IS: 73-2013)
1	Penetration at 25^{0}C, 100g, 5 Sec 1/10 mm	68	IS: 1203-1978 (RA-2009)	60 to 70
2	Softening point, ^{0}C	51	IS: 1205-1978 (RA-2009)	Min. 45
3	Ductility at 27^{0}C, cm	>100	IS: 1208-1978 (RA-2009)	Min. 50
4	Flash Point, ^{0}C	282	IS: 1209-1978 (RA-2009)	Min. 220

*Information is furnished by the Customer/Representative.

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ಎಸ್.ಬಿ.ಎಂ ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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VISHWANATH .C
Quality Manager

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
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Job No.: CTCE/BBMP/W.No.13/GNR/BC/AIV/2015-16 09.03.2016

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Mr. G.N. Ramesh,** No. 01, 3rd Main, Gandhi Grama, 7th Cross, Maruthi Layout, Bangalore - 560021.
Name of the Work	Improvements and Asphalting of Prashanthanagara & balance roads in Ward No. 13 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	EE/DD/WO/365/2014-15 Dated: 31.03.2015
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	09.03.2016

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	21.67	22.08	21.87

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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JobNo: CTCE/BBMP/W.No.13/GNR/BC/Gradation/2015-16 11.03.2016

BITUMEN GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

AASHTO T 30

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Mr. G.N. Ramesh,** No. 01, 3rd Main, Gandhi Grama, 7th Cross, Maruthi Layout, Bangalore - 560021.
NAME OF THE WORK	Improvements and Asphalting of Prashanthanagara & balance roads in Ward No. 13 in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	EE/DD/WO/365/2014-15 Dated: 31.03.2015
SAMPLE I/D	Roads in Prashanthanagara, Ward No. 13, BBMP
DATE OF TESTING	11.03.2016

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GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	43.56	9.21	9.21	90.79	79-100
9.5	35.62	7.53	16.74	83.26	70-88
4.75	72.24	15.27	32.01	67.99	53-71
2.36	65.89	13.93	45.94	54.06	42-58
1.18	50.42	10.66	56.60	43.40	34-48
0.6	62.38	13.19	69.79	30.21	26-38
0.3	45.81	9.68	79.48	20.52	18-28
0.15	33.97	7.18	86.66	13.34	12-20
0.075	36.45	7.71	94.36	5.64	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	36.48	7.70	7.70	92.30	79-100
9.5	46.89	9.89	17.59	82.41	70-88
4.75	71.53	15.09	32.68	67.32	53-71
2.36	61.25	12.92	45.60	54.40	42-58
1.18	73.15	15.43	61.03	38.97	34-48
0.6	41.86	8.83	69.86	30.14	26-38
0.3	36.23	7.64	77.51	22.49	18-28
0.15	43.78	9.24	86.74	13.26	12-20
0.075	33.62	7.09	93.84	6.16	4-10

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Job No.: CTCE/BBMP/W.No.13/GNR/BC/Agg/2015-16 11.03.2016

Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Mr. G.N. Ramesh,** No. 01, 3rd Main, Gandhi Grama, 7th Cross, Maruthi Layout, Bangalore - 560021.
Name of the Work	Improvements and Asphalting of Prashanthanagara & balance roads in Ward No. 13 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	EE/DD/WO/365/2014-15 Dated: 31.03.2015
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	11.03.2016

Total Weight of Sample: **5400** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade II specification as per MORTH
13.2	538	9.96	9.96	90.04	79 - 100	
9.5	556	10.30	20.26	79.74	70 - 88	
4.75	724	13.41	33.67	66.33	53 - 71	
2.36	635	11.76	45.43	54.57	42 - 58	
1.18	615	11.39	56.81	43.19	34 - 48	
0.600	690	12.78	69.59	30.41	26 - 38	
0.300	613	11.35	80.94	19.06	18 - 28	
0.150	289	5.35	86.30	13.70	12 - 20	
0.075	415	7.69	93.98	6.02	4 - 10	

Total Weight of Sample: **4850** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade II specification as per MORTH
13.2	642	13.24	13.24	86.76	79 - 100	
9.5	469	9.67	22.91	77.09	70 - 88	
4.75	637	13.13	36.04	63.96	53 - 71	
2.36	505	10.41	46.45	53.55	42 - 58	
1.18	645	13.30	59.75	40.25	34 - 48	
0.600	516	10.64	70.39	29.61	26 - 38	
0.300	395	8.14	78.54	21.46	18 - 28	
0.150	406	8.37	86.91	13.09	12 - 20	
0.075	315	6.49	93.40	6.60	4 - 10	

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Job No.: CTCE/BBMP/W.No.13/GNR/BC/Stability/2015-16 11.03.2016

TEST REPORT ON STABILITY OF MIX

Client	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. G.N. Ramesh,** No. 01, 3rd Main, Gandhi Grama, 7th Cross, Maruthi Layout, Bangalore - 560021.
Name of the Work	:	Improvements and Asphalting of Prashanthanagara & balance roads in Ward No. 13 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference		EE/DD/WO/365/2014-15 Dated: 31.03.2015
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	11.03.2016

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The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.35	9.65	9 Kn (min)
2	Marshal flow, mm	2.20	3.50	2 – 4
3	Percent air voids in Mineral Aggregate	14.25	13.35	13 – 15
4	Voids in Compacted Mix	5.10	4.70	3 – 6
5	Percent Voids filled with Bitumen	68.95	69.45	65 - 75
6	Density, g/cc	2.26	2.27	--

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